REMARKS

The Office rejected the claims of the Amendment filed in the present application on July 31, 2006 on essentially the same grounds as presented in the Office Action of March 30, 2006 to reject the claims of the February 13, 2006 Amendment. The Response filed on July 31, 2006 in the present case included four arguments why the presently claimed invention is not anticipated by Kim (see the last full paragraph on page 6 of the July 31 Amendment). The Office Action of October 20, 2006 did not consider all of the arguments of Applicants' July 31 Response .

Applicants' arguments included:

(1) a liquid crystal cell having an in-plane switching mode does not inherently have interdigitated electrodes (see page 2, line 2 to page 3, line 5 from the bottom of Applicants' July 31, 2006 Response),

(2) mechanical rubbing cannot provide a pretilt angle of substantially 0° (see page 3, line 3 from the bottom to page 4, line 6 from the bottom of Applicants' July 31, 2006 Response),

(3) the one-headed arrows used in the figures of Kim described pretilt angles that are not substantially 0° (see page 4, line 5 from the bottom to page 5, line 6 from the bottom of Applicants' July 31, 2006 Response), and

(4) the Office relies on disclosure of Kim which does not describe a device having a pair of substrates both of which are irradiated (see page 5, line 5 from the bottom through page 6 of Applicants' July 31, 2006 Response).

However, on page 6 of the October 20 Office Action, the Office asserted:

> Applicants' ONLY arguments are follows:
>
> A liquid crystal cell having an in-plane switching mode but do not have interdigitated electrodes:

(i) surface stabilized ferroelectric liquid crystal display devices (Clark),

(ii) flexoelectric liquid crystal cell display devices (Patel), and

(iii) field-controlled anchoring liquid crystal display devices (Jaegemalm).

The Office therefore only considered one of the arguments of Applicants' July 31 Response; namely, Applicants' arguments that liquid crystal cells having an in-plane switching mode do not inherently have interdigitated electrodes. This argument of Applicants' July 31 Response included a discussion of the Clark, Patel and Jaegemalm publications. It was pointed out that these publications provide evidence that liquid crystal cells having an in-plane switching mode do not inherently have interdigitated electrodes (see page 2, line 7 through page 3, line 20 of Applicants' July 31 Response).

Applicants thus submit that the Office Action of October 20, 2006 did not consider all of Applicants' arguments in support of patentability. The finality of the rejection is therefore improper and should be withdrawn. Applicants respectfully request reconsideration of all of Applicants' arguments as presented in the July 31 Response.

Applicants further submit that it appears that the Office is importing limitations to the claimed invention when determining patentability. For example, the second full paragraph on page 7 of the October 20 Office Action appears to indicate that the Office is importing limitations from the figures into the claimed invention and/or is characterizing the claimed invention in a manner that is not appropriate with respect to the plain text of the claims.

In particular, the last sentence of the second full paragraph on page 7 of the October 20 Office Action states:

> The device of invention is passive type LCD while a in-plane switching mode LCD can be active type LCD.

The Office provides no explanation of how this sentence or how this alleged characterization of the present invention is relevant to the Office's determination of

patentability. Applicants point out that the present claims do not state that the claimed liquid crystal display device is a "passive type" or "active type" display.

Moreover, it appears that the Office is using the above-quoted sentence to characterize the claimed invention as an LCD that does not have an in-plane switching mode and is instead a passive type liquid crystal display.

Not only does the Office not provide any support for such a characterization, the Office appears to be ignoring the plain language of the claims. For example, independent Claim 1 explicitly states that the alignment layer has a plurality of liquid crystal in-plane anchoring directions. Moreover, the present specification discloses that various embodiments of the invention are able to carry out in-plane switching (see for example, paragraph nos. [0019], [0114], [0075], and [0035] of the PG publication corresponding with the present application, i.e., 2002/0191136).

Applicants thus traverse the Office's assertions in the second full paragraph on page 7 of the October 20 Office Action to the extent that the Office's assertions can be understood.

In any case, the Office's assertions appear to have no logical connection to the rejection. For example, as stated above, it appears that the Office is of the belief that the claimed invention is a "passive type LCD" that does not have an in-plane switching mode. However, on the other hand, the Office asserts that liquid crystal display devices having an in-plane switching mode inherently have interdigitated electrodes. There does not appear to be any logical connection between (i) the Office's assertion that the claimed invention is a passive type LCD that does not have an in-plane switching mode and (ii) the Office's assertion that the claimed invention is anticipated because LCDs having an in-plane switching mode inherently have interdigitated electrodes. The Office's assertions (i) and (ii) are contradictory.

Further, the Office relies on Tomioka (U.S. 6,682,783) as support that LCDs having an in-plane switching mode inherently have interdigitated electrodes. Although the Office provides no direct citation to any particular disclosure of Tomioka, Applicants assume that the Office intends to rely upon the disclosure at column 1, lines 36-46 reproduced below:

> In the active matrix type liquid crystal display apparatus of an in-plane switching type, display of information by the liquid crystal apparatus is performed by applying an electric field nearly in parallel to the surface of the substrate using interdigitative electrodes and utilizing birefringence of the liquid crystal to control optical properties of the display. The in-plane switching mode has the advantages of providing a wider viewing angle and lower storage capacitance compared to the conventional nematic type and, accordingly, is a promising technology for the active matrix type liquid crystal display apparatus.

However, the above-quoted disclosure of Tomioka does not state that all in-plane switching type liquid crystal display apparatus have interdigitated electrodes. The disclosure of Tomioka, at best, is a general statement of the background art and is insufficient support for an allegation that all nematic liquid crystal cells having an in-plane switching mode inherently include a group of interdigitated electrodes.

Moreover, Applicants submit that, contrary to the Office's opinion the technical publications submitted together with the Resposne of July 31, 2006 disclose liquid crystal display devices having an in-plane switching mode without interdigitated electrodes.

For example, Jaegemalm discloses:

> The switching mode of the optical axis occurs with a large component in the plane of the sample even though the electric field is applied normal to the sample surfaces.
>
> To conclude, we have presented a device based on an electro-optic effect that involves switching of the optic axis with a large component in the plane of the sample even though the electric field is applied normal to the bounding surfaces.

See lines 3-5 of the Abstract and lines 7-11 of the right column of page 1618 of Jaegemalm.

Applicants submit that the above disclosure from Jaegemalm explicitly discloses a liquid crystal display device having an in-plane switching mode. This is underscored by Figure 1 of Jaegemalm which provides a schematic representation of the switching.

With regard to the exclusion of interdigitated electrodes, Jaegemalm discloses the following:

> The cells used in this study were of the conventional sandwich type consisting of two indium-tin-oxide (ITO) coated glass plates (Baltracon Z20) with alignment layers of obliquely evaporated SiO_x

See lines 13-16 of the right column of page 1616 of Jaegemalm.

This description of the Jaegemalm liquid crystal display device makes it clear that the Jaegemalm device is a conventional sandwich cell having ITO electrodes. The cells are described as "consisting of" the ITO coated glass plates and alignment layers of SiO_x. Thus, the cells of Jaegemalm do not include interdigitated electrodes such as the group of interdigitated electrodes of the presently claimed invention which apply an electric field having a component substantially parallel to the surfaces of the claimed liquid crystal display device.

With regard to Patel, Applicants draw the Office's attention to the following disclosure:

> The inner surfaces of the cell are coated with transparent electrically conductive layers so that an electric field can be applied perpendicular to the plates and the helix axis. When such a cell is observed between crossed polarizers, extinction is observed whenever the helix axis is parallel or perpendicular to the polarizer, since macroscopically a small-pitch cholesteric acts like a uniaxial crystal with the helix as its optical axis. In this extinction configuration, when a small electric field is applied, the cell transmits light, indicating a rotation of the optical axis in the plane of the cell.

See lines 16-26 of the left column of page 1538 of Patel.

Applicants submit that the first sentence quoted above describes a structure of a liquid crystal cell that does not have interdigitated electrodes and instead has surfaces that are coated with transparent electrically conductive layers. Moreover, the above-quoted disclosure makes it explicitly clear that the switching mode (e.g., rotation) occurs "in the plane of the cell." The above-quoted disclosure of Patel directly refutes the Office's assertion that LCDs having an in-plane switching mode inherently include interdigitated electrodes.

Further still, Clark discloses:

> The bounding plates were glass, coated with semitransparent conductive (100 Ω/cm^2) SnO_2 layers.

See lines 5-7 of the left column of page 901 of Clark.

As discussed above for Jaegemalm and Patel, the above-quoted disclosure of Clark shows that the Clark device is a liquid cell that has semitransparent conductive SnO_2 layers and not interdigitated electrodes.

Coincidentally, the Clark publication is referenced in the Jaegemalm publication and is described by Jaegemalm as follows:

> During the last 15 years attention has therefore been focused on techniques where the optic axis can be switched in the plane of the display. However, for in-plane switching in nematics the electric field usually has to be applied in the plane of the display which causes problems with resolution and additional costs.

See lines 11-18 of in the left hand column of page 1616 of Jaegemalm.

Thus, even if Clark does not explicitly disclose that the Clark liquid crystal display device uses an in-plane switching mode, Applicants submit that those of ordinary skill in the art would recognize that this is a feature of the Clark device from the description of the Clark device provided in Jaegemalm. Moreover, the figure on page 899 of Clark indicates the switching by the identifiers "UP" and "DOWN". The switching occurs relative to the spontaneous polarization vector "P" and the vector "$\hat{n}$" indicating the corresponding optical

axis. The figure of Clark therefore further supports Applicants' contention that Clark discloses a liquid crystal display device utilizing an in-plane switching mode in the absence of interdigitated electrodes.

On lines 13-14 and 19-21 of page 6 of the October 20 Office Action, the Office appears to object to Applicants' submission of technical information from Clark and Patel on the grounds that Clark and Patel do not describe nematic liquid crystal display devices. Applicants point out however that Tomioka contrasts nematic displays and active matrix displays and in no way indicates that interdigitated electrodes must be present in nematic displays. For example Tomioka acknowledges that devices having an in-plane switching mode are different from devices having a nematic type display, e.g., "the in-plane switching mode has the advantages of ... compared to the conventional twisted nematic type ...". Thus, the Office's argument that Clark and/or Patel do not disclose a nematic liquid crystal display device are not relevant to the question whether an LCD having an in-plane switching mode inherently has interdigitated electrodes.

For the reasons discussed above in detail, Applicants submit that the rejections of the present claims as anticipated by Kim are not supportable and the rejection should be withdrawn. Applicants respectfully request withdrawal of the rejections and the allowance of all now-pending active claims.

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